REMARKS

Claim 29 has been amended to address informalities. Claims 5-15, 20-23 and 26-30 are presented for further examination.

In the Drawings

The Examiner objected to the drawings as failing to comply with 37 CFR 1.83(a). Replacement drawings (Figs. 1-7) are being submitted herewith in compliance with 37 CFR 1.121(d).

Claim Objections

The Examiner objected to claim 29 due to informalities. Claim 29 has been amended to correct "integrated" to read "integrator". Applicants respectfully request that the objection to claim 29 be withdrawn.

Claim Rejections – 35 USC §112

The Examiner makes several claim rejections under 35 U.S.C. §112. The Examiner's rejections, however, are incorrect because these rejections are based upon a flawed analysis: the Examiner is considering the claims in a vacuum, without any regarding for the specification. The Federal Circuit has held that viewing claims in a vacuum is an incorrect approach: "Claim language does not exist in a vacuum; it must be understood by reference to the documents annexed to the patent grant, including the specification, of which the claims are a part, and any drawings." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 990-991 (Fed. Cir. 1995); *see also Bancorp Services, L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1372, 69 USPQ2d 1996, 1999-2000 (Fed. Cir. 2004) (holding that the disputed claim term "surrender value protected investment credits" which was not defined or used in the specification was discernible and hence not indefinite because "the components of the term have well recognized meanings, which allow the reader to infer the meaning of the entire phrase with reasonable confidence"); *Metabolite*

Labs., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1366, 71 USPQ2d 1081, 1089 (Fed. Cir. 2004) ("The requirement to 'distinctly' claim means that the claim must have a meaning discernible to one of ordinary skill in the art when construed according to correct principles. Only when a claim remains insolubly ambiguous without a discernible meaning after all reasonable attempts at construction must a court declare it indefinite.").

In the instant case, the claims are clear to one skilled in the art for the reasons presented below.

The Examiner rejected claims 5-30 under 35 U.S.C. 112, second paragraph, as being indefinite. Applicants respectfully traverse this rejection for at least the following reasons.

Current Limit Region

In the Office Action dated Dec. 23, 2008, the Examiner states that it is "not clear what comprises a 'current limit region.'" See Office Action dated Dec. 23, 2008, p.3. The Examiner's attention is respectfully directed to the Specification for the definition of a "current limit region." "The current limit region restricts the loop current in the system when the loop resistance is small, such as in the case of a short subscriber loop." Specification, p.14, ll. 11-13. The Specification also discloses (with respect to Figs. 3 & 4): "The current limit region is defined by a line 350 that runs between points V1 and ILIM. The values for V1 and ILIM may be user programmable. The ILIM defines the upper limit of the loop current during operation." Specification, p.14, line 25 to p.15, line 2. Additionally, the Examiner's attention is directed to Figures 3 & 4 of the Specification for a clearer understanding. Figure 3 shows a curve 350 which extends from V1 to ILIM (as described in the specification); this curve "defines" the current limit region. In other words, looking at Figure 3, the area in the Figure to the right of curve 350 is the current limit region. This is further reinforced by Figure 4 of the Specification, which shows the synthesized curve 405 in the current limit region, as set forth in the

specification. The horizontal axis in Figures 3 & 4 is the loop current (ILOOP) axis. As the horizontal axis indicates, values increase as they move to the right along the ILOOP axis. As such, the Current Limit curve 350 (a vertical curve having infinite slope) represents highest value of current possible before the current limit region is reached. Thus, in view of the Specification, the reference to the current limit region is clear to one skilled in the art.

The Examiner indicates in the Office Action dated Dec. 23, 2008, that he is confused as to how a current limit region with a curve synthesized therein can still be a current limit region. Applicants offer the following non-limiting, illustrative example to aid in the Examiner's understanding. The Specification discloses that "the DC feed logic 321 synthesizes a portion 405 of the DC feed curve in the current limit region." *See* Specification, p.15, ll. 5-6. The Specification also discloses:

> "As mentioned above, if the line card 10 is operating in the current feed region 350, the current limiter 317 (see Figure 2) outputs either a positive or negative DILIM signal to the CANC input 270 of the SLIC 30, depending on the polarity of the DINT signal. The DC feed logic 321 adjusts the loop voltage, VLOOP, such that the VLOOP = RLOOP * ILIM. To do this, the DC feed logic 321, in accordance with the present invention, synthesizes an artificial curve, LIMIT_SLOPE, in the current limit region 350 to determine the value of DVLOOP, as described in more detail below with respect to Figure 6.
>
> Figure 6 illustrates a method of synthesizing the LIMIT_SLOPE curve 405 in the current limit region 350 of the DC feed curve of Figure 3. Additionally, Figure 7 illustrates a synthesized portion of the DC feed curve of Figure 3 in accordance with the present invention that may be utilized by the line card 10 of Figure 2." *See id.* at p.19, ll.6-17.

With these cited passages in mind, the Examiner is respectfully requested to read the Specification, p.19, line 19 to p.21, line 11, for an illustrative, non-limiting example of a synthesized curve implementation. As can be seen from a reading of the cited passages in the Specification, a current limit region (as described in the Specification) does not cease to be the current limit region because a curve is synthesized within. The Current Limit Region, per exemplary embodiments described in the Specification, may be operated in using a synthesized

curve 405. The term "Current Limit" still applies to this region because the current is still limited, but the region has been modified by a synthesized curve 405. *See* Specification, Figures. 4 & 7.

As another illustrative point, the Examiner is respectfully requested to compare Figures 3 & 4 in the Specification. By comparing these two figures, the Examiner can see where the current limit region resides and how the synthesized curve may exist within the current limit region.

Linear Curve

The Examiner also rejected claims 5-30 based upon the term "linear." The Examiner contends that the term "linear" is indefinite and "it is not clear how the applicant's [sic] device as enabled by the specification would implement a perfectly linear synthesized curve." Office Action dated Dec. 23, 2008, pp.3-4.

Applicants submit that a person of ordinary skill in the art would recognize that "linear" means "of, relating to, resembling, or having a graph that is a line and esp. a straight line." MERRIAM WEBSTER'S COLLEGIATE DICTIONARY 677 (10th Ed.). The specification uses linear in the common meaning of the term: "[T]he VLOOP to vary from V1 to zero linearly in the current limit region." Specification, p.21, ll. 1-2; Figs. 4 & 7. Based upon at least this description, the term "linear" is not indefinite.

Moreover, the Examiner's reference to "a perfectly linear" curve is unclear. As an initial matter, the claim language does **not** call for "a perfectly linear" curve as indicated by the Examiner. Rather, claim 5 calls for the synthesized curve is a "linear curve" with a negative slope. Indeed, one of ordinary skill in the art would recognize that, as a practical matter, linear curves may not necessarily be "perfect," particularly in view of signal noise and other factors.

The "linear curve" referenced in the claims is amply described in the specification. For example, the Specification describes a linear curve with a negative slope at page 19, line 14 through page 21, line 5. On page 19 of the Specification, Applicants introduce "the LIMIT_SLOPE curve 405 in the current limit region 350 of the DC feed curve…." Specification, p.19, ll. 14-17. The Specification also describes how the LIMIT_SLOPE value (*i.e.,* the slope of the curve 405) "will allow the VLOOP to vary from V1 to zero linearly in the current limit region." Specification, p.21, ll. 1-2. In other words, because VLOOP changes from a positive value to zero (going right to left along the VLOOP axis in Fig. 4), a linear curve with a negative slope results.

For another example of a linear curve with a negative slope, as called for in claim 5, the Examiner's attention is respectfully directed to Figures 4 & 7 of the Specification. In Figures 4 & 7, curve 405 is illustrated. Curve 405 extends from V1 to the ILOOP axis, and the curve is linear with a negative slope.

Integrated

The Examiner also rejected claims 27 and 29 based upon the term "integrated." The Examiner argues that "it is not exactly clear what is being integrated." Office Action dated Dec. 23, 2008, p.4. The claim itself specifies what is integrated – in particular, the signal that is received over the first path (see claim 26, from which claim 27 depends). Further, the specification describes that integrators were well-known to those skilled in the art:

> As described in more detail below, the DC cancellation logic 315 may include either a low-pass filter (not shown) having an adjustable bandwidth or an integrator (not shown) having an adjustable gain. The DC cancellation logic 315 includes one or more comparators (not shown) for comparing an incoming signal with preselected values, as described in more detail below. Low-pass filters, integrators, and comparators are generally known in the art; accordingly, these devices are not described in detail herein as one skilled in the art having the benefit of this disclosure is capable of employing these devices in a manner consistent with the instant invention. Specification, p.13, ll. 2-9.

Saturation and Current Limit Regions

The Examiner also rejected claim 30 based upon the terms "saturation region" and "current limit region." The Examiner's attention is directed to the preceding arguments in this response for a detailed explanation of "current limit region." With respect to the term "saturation region," the Examiner's attention is directed to the Specification: "The anti-saturation region restricts the loop voltage when the loop resistance is too high, such as in the case of a long subscriber loop." Specification, p.14, ll. 10-11. The Specification also states: "The anti-saturation region is defined by a line 340 that runs between points VOC and V2 and has a slope of RFD_SAT." Specification, p.14, ll. 17-18; *see also* Specification, Figs. 3 & 4. Hence, the saturation region is the area on the graphs of Figures 3 & 4 that is above curve 340 with respect to the vertical axis (VLOOP).

Conclusion for §112 Rejections

For at least the aforementioned reasons, Applicants respectfully submit that the claims (5-30) rejected by the Examiner under 35 U.S.C. §112, ¶2, are not indefinite. Applicants request that the rejection of claims 5-30 under 35 U.S.C. §112, ¶2, be withdrawn.

Claim Rejections – 35 USC §102

The Examiner rejected claims 5-15, 12-23 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,926,544 (***Zhou***). Applicants respectfully traverse this rejection.

The Examiner makes a similar rejection that was made and retracted nearly four years ago by a previous Examiner (Jeffery Harold). Like Examiner Jamal now argues, Examiner Harold argued in 2004 that ***Zhou*** anticipates claims 5-15 and 12-23. *See* Office Action, June 9, 2004. The Applicants pointed out (for reasons once again explained below) to Examiner Harold that Zhou was not an anticipating reference. *See* Response, 7-30-2004. After thoroughly

considering the Applicants' arguments, Examiner Harold correctly acknowledged in a May 2, 2005 Office Action that the pending claims were, in fact, allowable over ***Zhou***. Instead of rehashing arguments that have been previously advanced and withdrawn by Examiner Harold, Applicants respectfully urge Examiner Jamal to allow the pending claims.

For ease of illustration, claim 5 is discussed first. Claim 5 is directed to a method for DC feed control for a line card. The method comprises determining if the line card is operating in a current limit region of a DC feed curve; synthesizing a curve in the current limit region of the DC feed curve; determining a loop voltage based on the synthesized curve; and applying the loop voltage to the subscriber line.

The Examiner's rejection of claim 5, based on ***Zhou***, is incorrect because ***Zhou*** does not teach at least one of the claimed features. For example, claim 5 calls for determining if the line card is operating in a current limit region of a direct current (DC) feed curve. The Examiner argues this feature is taught by ***Zhou*** (*see* Office Action dated Dec. 23, 2008, p.4-5), because ***Zhou*** describes a low-pass bandwidth filter 1000 that maintains the subscriber-loop power within the power envelope 400 (the power envelope 400 is defined as the area between lines 402 and 404 in Fig. 4). *See* ***Zhou***, Figs. 4 & 9, col. 12, line 19 to col. 14, line 12 (as cited by the Examiner); col. 5, ll. 27-31 (defining the power envelope boundaries). ***Zhou*** teaches that the response time of the low-pass filter 1000 is adjusted (*i.e.,* increased) in order to "maintain the power feed to the subscriber loop within a predetermined power feed envelope." *See, e.g., id.* at col. 12, ll. 19-38. By "maintaining the power feed…within…[the] power feed envelope," ***Zhou*** ensures that no operation outside the power feed envelope occurs; in other words, ***Zhou*** does **not** operate in a current limit region, as called for in claim 5, because the current limit region is outside of the power feed envelope.

In the Office Action dated Dec. 23, 2008, the Examiner points to Fig. 4, 408, when referring to the current limit region taught in ***Zhou***. *See* Office Action dated Dec. 23, 2008, p. 4, #7. The Examiner has misapplied the reference, however, because Fig. 4, 408, in ***Zhou*** depicts the DC battery curve, not the current limit region as called for in claim 5. *See* ***Zhou***, Fig. 4 (408) & col. 5, ll. 38-45 (identifying curve 408 as the DC battery curve). The Examiner also refers to Fig. 4 (410) as the current limit region. *See* Office Action dated Dec. 23, 2008, pp. 4-5, #7. Again, the Examiner has misapplied the reference, however, because Fig. 4, 410, in ***Zhou*** depicts the saturation region of the power envelope 400, not the current limit region, as called for in claim 5. *See* ***Zhou***, Fig. 4 (410) & col. 5, ll. 47-65 (identifying 410 as the saturation region). The current limit region in Fig. 4 of ***Zhou*** is not enumerated, nor is the current limit region described in the disclosure of ***Zhou***. This is not surprising because ***Zhou*** is not concerned with the operation of a line card in a current limit region of a direct current (DC) feed curve. Rather, ***Zhou*** is concerned with maintaining operation of the power feed within the power feed envelope. *See, e.g., id.* at col. 12, ll. 19-38.

Claim 5 also calls for synthesizing a curve in the current limit region of the DC feed curve. The Examiner has not addressed this claimed feature due to the Examiner's §112 rejection of claim 5. The Examiner instead assumed that the claim element meant something different than what Applicants have actually claimed (*i.e.,* the Examiner assumed the claim called for a Voltage/Current characteristic to reduce transients produced at the current limit during on-hook/off-hook transitions. As discussed above in the ***Claim Rejections – 35 USC §112*** section, however, this claimed feature is not indefinite, and Applicants respectfully request the Examiner to consider this claim element as written and set forth in claim 5. Applicants respectfully assert that ***Zhou*** is silent with respect to synthesizing a curve in the current limit region of the DC feed curve. This is not surprising because ***Zhou*** is not concerned with the

current limit region of a circuit. The Examiner, however, repeatedly states that ***Zhou*** teaches a Digital Signal Processor (DSP) operating in a current limit region, but the Examiner has not specifically pointed to any teaching in ***Zhou*** to substantiate this conclusory statement. *See* Office Action dated Dec. 23, 2008, pp. 4-5, #7, p.7. Claim 5, in contrast, calls for synthesizing a curve in the current limit region.

For at least the aforementioned reasons, claim 5 and its dependent claims are allowable. For similar reasons, the remaining claims are also allowable.

The Examiner is also invited to reconsider the arguments made in the comments accompanying the Request for Continued Examination filed October, 16, 2008, in light of the arguments set forth herein.

In view of reasons presented above, the pending claims are allowable. As such, reconsideration of the present application is respectfully requested, and a Notice of Allowance is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Houston, Texas telephone number (713) 934-4064 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted,

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